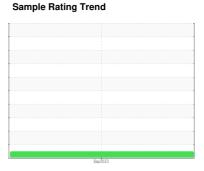


OIL ANALYSIS REPORT



Diesel Engine

GIBRALTAR 15W/40 SUPER S-3 LX (11)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

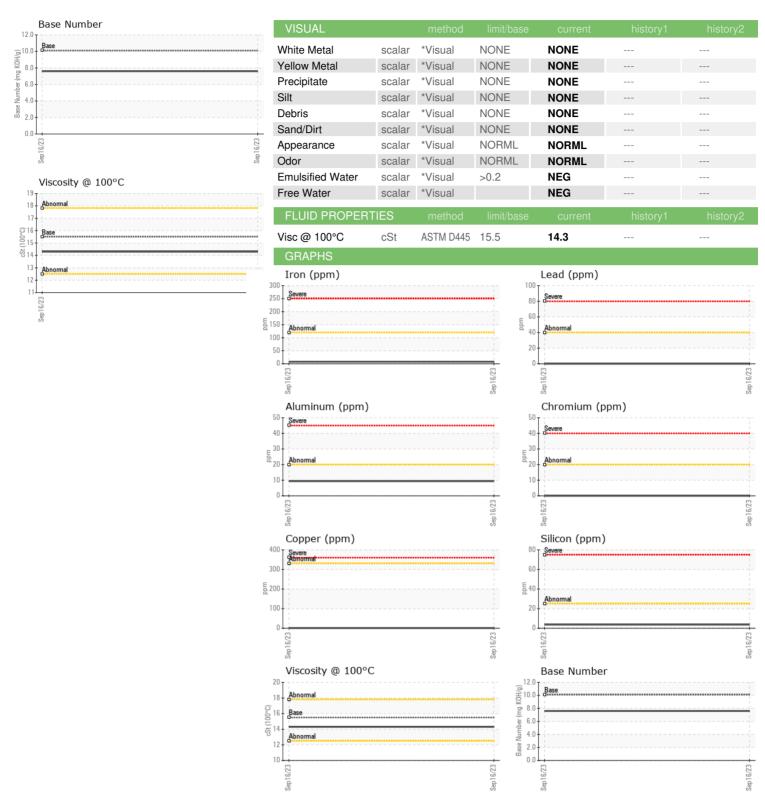
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION					Sep2023		
Sample Date Client Info 16 Sep 2023	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 1561 Oil Changed Client Info 450 Sample Status Image: Control Info Changed CONTAMINATION method Image: Control Image: Contr	Sample Number		Client Info		WC0840450		
Oil Age hrs Client Info 450 Oil Changed Client Info Changed Sample Status NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0 Glycol WC Method >3.0 <1.0 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 0 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 0 Chromium ppm ASTM D5185m >20 0 Iron ppm ASTM D5185m >20 0 Silver ppm ASTM D5185m	Sample Date		Client Info		16 Sep 2023		
Oil Changed Sample Status Client Info Changed NORMAL	Machine Age	hrs	Client Info		1561		
CONTAMINATION	Oil Age	hrs	Client Info		450		
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	Oil Changed		Client Info		Changed		
Fuel	Sample Status				NORMAL		
WEAR METALS	CONTAMINATION	١	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 8 Chromium ppm ASTM D5185m >20 0 Nickel ppm ASTM D5185m >2 0 Silver ppm ASTM D5185m >2 0 Aluminum ppm ASTM D5185m >2 0 Lead ppm ASTM D5185m >20 9 Lead ppm ASTM D5185m >20 9 Copper ppm ASTM D5185m >20 9 Vanadium ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 ADDITIVES method limit/base current	Fuel		WC Method	>3.0	<1.0		
Iron	Glycol		WC Method		NEG		
Chromium ppm ASTM D5185m >20 0 Nickel ppm ASTM D5185m >5 0 Tittanium ppm ASTM D5185m >2 0 Silver ppm ASTM D5185m >20 9 Aluminum ppm ASTM D5185m >20 9 Lead ppm ASTM D5185m >40 0 Copper ppm ASTM D5185m >33.0 <1 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 8 Molybdenum ppm ASTM D5185m 0	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	8		
Titanium	Chromium	ppm	ASTM D5185m	>20	0		
Silver ppm ASTM D5185m >2 0 Aluminum ppm ASTM D5185m >20 9 Lead ppm ASTM D5185m >40 0 Copper ppm ASTM D5185m >330 <1 Tin ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Barium </td <td>Nickel</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>5</td> <td>0</td> <td></td> <td></td>	Nickel	ppm	ASTM D5185m	>5	0		
Aluminum ppm ASTM D5185m >20 9 Lead ppm ASTM D5185m >40 0 Copper ppm ASTM D5185m >330 <1	Titanium	ppm	ASTM D5185m	>2	0		
Lead	Silver	ppm	ASTM D5185m	>2	0		
Copper ppm ASTM D5185m >330 <1 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	9		
Tin ppm ASTM D5185m >15 <1 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 8 Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 1000 839 Magnesium ppm ASTM D5185m 1050 1303 Calcium ppm ASTM D5185m 1150 1038 Zinc ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m >25 4 Sod	Lead	ppm	ASTM D5185m	>40	0		
Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 8 Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 0 Manganese ppm ASTM D5185m 1000 839 Magnesium ppm ASTM D5185m 1050 1303 Calcium ppm ASTM D5185m 1150 1038 Zinc ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m 3547 CONTAMINANTS method limit/base current history1 history2 Sodium	Copper	ppm	ASTM D5185m	>330	<1		
Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 8 Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 66 65 Magnesium ppm ASTM D5185m 1000 839 Calcium ppm ASTM D5185m 1050 1303 Phosphorus ppm ASTM D5185m 1150 1038 Zinc ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m 3547 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 21	Tin	ppm	ASTM D5185m	>15	<1		
ADDITIVES	Vanadium	ppm	ASTM D5185m		0		
Boron ppm ASTM D5185m 0	Cadmium	ppm	ASTM D5185m		0		
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 66 65 Manganese ppm ASTM D5185m 1000 839 Magnesium ppm ASTM D5185m 1050 1303 Calcium ppm ASTM D5185m 1050 1038 Phosphorus ppm ASTM D5185m 1270 1283 Zinc ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m 3547 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 Sodium ppm ASTM D5185m >20 21 Potassium ppm ASTM D5185m >20 21 INFRA-RED method limit/base	Boron	ppm	ASTM D5185m		8		
Manganese ppm ASTM D5185m <1 Magnesium ppm ASTM D5185m 1000 839 Calcium ppm ASTM D5185m 1050 1303 Phosphorus ppm ASTM D5185m 1150 1038 Zinc ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m 3547 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 Sodium ppm ASTM D5185m >20 21 Potassium ppm ASTM D5185m >20 21 INFRA-RED method limit/base	Barium	ppm	ASTM D5185m		0		
Magnesium ppm ASTM D5185m 1000 839 Calcium ppm ASTM D5185m 1050 1303 Phosphorus ppm ASTM D5185m 1150 1038 Zinc ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m 3547 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 Sodium ppm ASTM D5185m >20 21 Potassium ppm ASTM D5185m >20 21 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.7 Sulfation Abs/.1mm *ASTM D7415 >30<	Molybdenum	ppm	ASTM D5185m	66	65		
Calcium ppm ASTM D5185m 1050 1303 Phosphorus ppm ASTM D5185m 1150 1038 Zinc ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m 3547 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 Sodium ppm ASTM D5185m >20 21 Potassium ppm ASTM D5185m >20 21 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 FLUID DEGRADATION "*ASTM D7414 >25<	Manganese	ppm	ASTM D5185m		<1		
Phosphorus ppm ASTM D5185m 1150 1038 Zinc ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m 3547 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 Sodium ppm ASTM D5185m >20 21 Potassium ppm ASTM D5185m >20 21 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.7 Nitration Abs/.1mm *ASTM D7415 >30 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 </td <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1000</td> <td>839</td> <td></td> <td></td>	Magnesium	ppm	ASTM D5185m	1000	839		
Zinc ppm ASTM D5185m 1270 1283 Sulfur ppm ASTM D5185m 3547 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 Sodium ppm ASTM D5185m >20 21 Potassium ppm ASTM D5185m >20 21 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 Nitration Abs/.1mm *ASTM D7624 >20 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Calcium	ppm	ASTM D5185m	1050	1303		
Sulfur ppm ASTM D5185m 3547 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 Sodium ppm ASTM D5185m >20 21 Potassium ppm ASTM D5185m >20 21 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 Nitration Abs/.1mm *ASTM D7624 >20 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6	Phosphorus	ppm	ASTM D5185m	1150	1038		
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 Sodium ppm ASTM D5185m <1	Zinc	ppm	ASTM D5185m	1270	1283		
Silicon ppm ASTM D5185m >25 4 Sodium ppm ASTM D5185m <1 Potassium ppm ASTM D5185m >20 21 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 Nitration Abs/.mm *ASTM D7624 >20 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6	Sulfur	ppm	ASTM D5185m		3547		
Sodium ppm ASTM D5185m <1	CONTAMINANTS			limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 21 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 Nitration Abs/cm *ASTM D7624 >20 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6	Silicon	ppm	ASTM D5185m	>25	4		
INFRA-RED	Sodium	ppm	ASTM D5185m		<1		
Soot % % *ASTM D7844 >4 0.2 Nitration Abs/cm *ASTM D7624 >20 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6	Potassium	ppm	ASTM D5185m	>20	21		
Nitration Abs/cm *ASTM D7624 >20 8.7 Sulfation Abs/.1mm *ASTM D7415 >30 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6	Soot %	%	*ASTM D7844	>4	0.2		
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.6	Nitration	Abs/cm	*ASTM D7624	>20	8.7		
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.6		
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 10.1 7.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.6		
	Base Number (BN)	mg KOH/g	ASTM D2896	10.1	7.6		



OIL ANALYSIS REPORT







Laboratory Sample No. Lab Number **Unique Number**

: 05961982 : 10668533

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : WC0840450

Diagnosed

: 27 Sep 2023 : 28 Sep 2023 Diagnostician : Wes Davis

Test Package : MOB 1 (Additional Tests: TBN) To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

INTERSTATE WASTE-OLD BRIDGE

586 OLD WATERWORKS ROAD OLD BRIDGE, NJ

US 08857

Contact: Timothy Ammon TAmmon@interstatewaste.com

T:

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